VMware® VMmark® V2.5.1 Results

Vendor and Hardware Platform: HP ProLiant DL580 Gen8 Virtualization Platform: VMware ESXi 5.1.0 U2 Build 1483097 VMware vCenter Server : VMware vCenter Server 5.1.0 Build 799731	VMmark V2.5.1 Score = 34.47 @ 28 Tiles

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 8/120/240

Tested By: Hewlett-Packard	Test Date: 01-28-2014

Performance Section	Configuration Section	Notes Section
Performance	Configuration	Notes for Workload

Performance

	mailserver			olio			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	331.60	1.00	43.15	4703.62	1.01	146.25	4258.20	1.94	55.46	3271.00	2.15	56.80	2341.78	2.21	61.56	1.57
p1	326.55	0.99	53.05	4709.95	1.01	149.44	4203.05	1.91	57.53	3197.75	2.11	60.16	2443.15	2.31	61.97	1.56
p2	326.05	0.99	53.00	4681.18	1.01	153.02	4110.10	1.87	60.85	2976.50	1.96	65.91	2109.38	1.99	71.36	1.49
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.27	0.99	43.05	4716.93	1.02	136.35	4569.43	2.08	45.95	3172.80	2.09	66.12	2324.70	2.20	69.28	1.57
p1	331.75	1.00	48.50	4695.52	1.01	137.21	4548.23	2.07	46.71	2978.28	1.96	65.74	2240.35	2.12	68.45	1.54
p2	325.77	0.99	53.00	4695.15	1.01	136.16	4547.75	2.07	46.66	2886.80	1.90	70.61	2073.22	1.96	73.50	1.50
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.95	1.00	43.00	4685.25	1.01	146.80	4269.95	1.94	55.13	3093.38	2.04	60.16	2354.15	2.22	61.01	1.55
p1	323.27	0.98	46.50	4684.25	1.01	149.69	4125.00	1.88	60.53	3102.32	2.04	64.70	2293.70	2.17	65.40	1.52
p2	327.95	0.99	53.00	4690.43	1.01	151.49	4143.90	1.88	59.52	3144.38	2.07	62.20	2306.15	2.18	64.21	1.54
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.60	1.00	70.72	4673.55	1.01	169.54	4545.55	2.07	46.75	3232.38	2.13	53.61	2447.78	2.31	49.31	1.59
p1	328.20	0.99	74.28	4665.98	1.01	165.69	4496.80	2.04	48.01	3316.25	2.18	54.68	2545.65	2.41	50.01	1.61
p2	330.68	1.00	84.00	4654.30	1.00	178.92	4511.68	2.05	47.68	3346.72	2.20	53.41	2659.50	2.51	49.79	1.63
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.05	1.00	50.25	4682.00	1.01	148.55	4359.35	1.98	52.20	3216.78	2.12	54.39	2373.30	2.24	53.60	1.57
p1	324.12	0.98	53.00	4685.50	1.01	152.55	4240.88	1.93	56.29	3302.90	2.18	59.85	2483.05	2.35	59.64	1.58
p2	325.90	0.99	53.00	4690.82	1.01	149.80	4147.98	1.89	59.39	3092.20	2.04	59.92	2341.88	2.21	61.96	1.53
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.20	0.99	52.75	4695.27	1.01	145.93	4095.12	1.86	61.83	3064.53	2.02	66.25	2182.88	2.06	72.72	1.51

p1	325.12	0.98	54.00	4672.40	1.01	149.68	4055.47	1.84	63.18	3029.55	2.00	68.25	2270.03	2.15	73.29	1.51
p2	325.98	0.99	54.00	4668.27	1.01	140.60	3919.00	1.78	68.43	2832.07	1.86	73.98	2006.38	1.90	79.05	1.44
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.00	0.99	74.00	4667.75	1.01	181.89	4129.65	1.88	59.10	3055.60	2.01	62.34	2418.40	2.29	62.13	1.54
p1	327.25	0.99	74.00	4670.98	1.01	189.45	4124.85	1.88	59.26	2985.05	1.97	63.91	2183.88	2.06	64.55	1.50
p2	323.32	0.98	79.70	4641.80	1.00	192.99	3929.28	1.79	66.36	3001.90	1.98	67.93	2199.38	2.08	70.09	1.48
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.07	0.98	74.00	4631.12	1.00	200.80	4345.12	1.98	51.58	3189.28	2.10	54.52	2358.55	2.23	59.46	1.55
p1	328.52	0.99	74.00	4646.85	1.00	207.01	4243.20	1.93	55.03	3111.25	2.05	58.32	2185.03	2.07	64.28	1.52
p2	325.90	0.99	74.00	4624.82	1.00	219.24	4222.38	1.92	55.36	3227.57	2.13	57.46	2285.12	2.16	63.70	1.54
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.10	0.98	48.23	4694.48	1.01	147.30	4377.77	1.99	51.48	3287.43	2.16	51.46	2457.97	2.32	54.69	1.58
p1	327.52	0.99	53.85	4677.45	1.01	149.35	4241.15	1.93	56.15	3128.38	2.06	58.61	2244.00	2.12	61.17	1.53
p2	328.38	0.99	53.77	4692.25	1.01	151.40	4188.02	1.90	57.95	3186.53	2.10	60.68	2422.38	2.29	63.03	1.56
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.75	0.99	104.00	4646.55	1.00	199.23	4269.80	1.94	54.43	3100.05	2.04	58.70	2309.93	2.18	56.23	1.54
p1	326.85	0.99	104.00	4642.30	1.00	206.42	2818.65	1.28	50.06	3327.62	2.19	57.44	2544.43	2.40	54.82	1.46
p2	331.02	1.00	112.00	4633.38	1.00	224.84	2671.45	1.21	48.71	3134.68	2.06	56.78	2432.50	2.30	55.28	1.42
TILE_10	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.75	0.99	50.23	4692.07	1.01	149.60	4360.52	1.98	52.23	3232.45	2.13	53.47	2324.68	2.20	56.02	1.56
p1	325.32	0.99	54.00	4682.10	1.01	154.32	4220.05	1.92	57.00	3195.00	2.10	60.52	2456.80	2.32	61.20	1.56
p2	324.15	0.98	53.98	4695.68	1.01	153.41	4184.07	1.90	58.06	3046.50	2.01	62.33	2218.40	2.10	63.17	1.51
TILE_11	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.88	0.99	54.00	4706.98	1.01	135.85	4411.43	2.01	50.72	3388.80	2.23	52.33	2224.68	2.10	69.80	1.57
p1	327.80	0.99	54.00	4706.27	1.01	143.96	4380.15	1.99	51.82	3273.82	2.16	52.58	2234.93	2.11	68.89	1.56
p2	329.25	1.00	54.00	4705.30	1.01	140.52	4421.15	2.01	50.40	3304.68	2.18	51.02	2074.53	1.96	73.57	1.54
TILE_12	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	321.80	0.97	51.00	4697.32	1.01	147.15	4326.10	1.97	53.30	3311.85	2.18	54.93	2485.55	2.35	59.35	1.58
p1	330.85	1.00	53.00	4709.95	1.01	148.55	4299.38	1.95	54.45	3143.47	2.07	57.89	2247.82	2.12	61.72	1.54
p2	321.70	0.97	53.00	4679.90	1.01	155.33	4242.55	1.93	55.99	3200.35	2.11	59.47	2343.88	2.22	61.57	1.55
TILE_13	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.98	1.00	53.17	4712.48	1.02	136.73	3983.22	1.81	65.94	2745.15	1.81	79.64	2204.68	2.08	71.10	1.47
p1	326.93	0.99	53.02	4710.38	1.01	143.41	3962.00	1.80	66.85	2772.78	1.83	78.19	2097.32	1.98	72.04	1.46
p2	330.68	1.00	53.83	4691.35	1.01	148.51	3829.80	1.74	72.21	2684.38	1.77	89.12	2188.05	2.07	79.22	1.45
TILE_14	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.80	1.00	54.00	4732.90	1.02	140.23	4216.27	1.92	57.00	3088.93	2.03	60.21	2245.45	2.12	61.73	1.53

p1	330.15	1.00	54.00	4693.40	1.01	149.87	4095.38	1.86	61.49	3109.65	2.05	64.21	2286.28	2.16	65.86	1.53
p2	328.25	0.99	56.75	4700.27	1.01	157.06	4147.23	1.89	59.32	2994.93	1.97	64.56	2281.22	2.16	65.70	1.52
TILE_15	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.45	0.99	54.00	4702.95	1.01	135.47	4039.30	1.84	63.25	2946.53	1.94	67.49	2145.12	2.03	68.37	1.49
p1	329.12	1.00	54.00	4682.77	1.01	142.30	3995.45	1.82	64.97	3047.70	2.01	67.47	2333.03	2.21	68.65	1.52
p2	321.45	0.97	54.00	4695.55	1.01	142.09	3889.12	1.77	69.04	2830.55	1.86	73.53	2060.85	1.95	74.90	1.45
TILE_16	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.30	1.00	53.90	4707.60	1.01	141.61	4336.98	1.97	52.80	3304.65	2.18	55.25	2410.43	2.28	57.51	1.58
p1	323.25	0.98	54.00	4677.80	1.01	150.87	4174.50	1.90	58.58	3053.68	2.01	61.87	2329.25	2.20	62.94	1.53
p2	322.00	0.98	54.00	4684.48	1.01	163.81	4166.95	1.89	58.76	3046.47	2.01	62.41	2156.85	2.04	67.87	1.50
TILE_17	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.70	1.00	51.65	4704.68	1.01	140.02	3948.68	1.80	67.20	3021.70	1.99	68.92	2274.35	2.15	73.26	1.51
p1	325.77	0.99	53.35	4691.95	1.01	149.42	3991.68	1.82	65.68	2927.05	1.93	69.04	2078.18	1.96	73.80	1.47
p2	324.00	0.98	53.70	4682.65	1.01	152.17	3847.93	1.75	71.28	2888.72	1.90	76.11	2064.05	1.95	81.62	1.45
TILE_18	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.65	1.00	73.00	4670.93	1.01	175.47	4176.52	1.90	57.05	3050.38	2.01	60.66	2391.40	2.26	57.68	1.54
p1	320.90	0.97	73.00	4653.80	1.00	183.75	4100.35	1.86	59.92	3012.57	1.98	63.02	2233.40	2.11	61.02	1.50
p2	331.35	1.00	73.53	4618.38	1.00	201.73	3933.93	1.79	65.81	3008.97	1.98	67.75	2327.50	2.20	67.89	1.51
TILE_19	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.60	0.99	80.50	4675.62	1.01	170.70	3878.85	1.76	68.14	3097.75	2.04	58.63	2261.72	2.14	59.23	1.50
p1	324.73	0.98	88.25	4647.30	1.00	185.64	3914.72	1.78	66.82	3226.93	2.13	57.70	2355.85	2.23	59.90	1.53
p2	330.50	1.00	104.00	4635.73	1.00	188.67	3784.30	1.72	71.93	3137.45	2.07	56.76	2358.25	2.23	59.70	1.51
TILE_20	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.15	0.98	61.10	4711.70	1.02	137.43	4294.52	1.95	54.39	3159.03	2.08	56.96	2290.45	2.16	58.45	1.54
p1	327.95	0.99	64.00	4689.68	1.01	151.40	4202.77	1.91	57.17	3237.62	2.13	58.20	2477.25	2.34	59.77	1.57
p2	322.77	0.98	64.00	4696.70	1.01	153.85	4236.38	1.93	56.25	3163.25	2.08	61.70	2303.82	2.18	63.95	1.54
TILE_21	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.20	1.00	188.88	4683.07	1.01	175.20	3822.45	1.74	70.74	3247.12	2.14	56.41	2305.15	2.18	62.94	1.52
p1	331.07	1.00	202.68	4669.35	1.01	178.72	3847.25	1.75	69.69	3106.00	2.05	58.06	2303.53	2.18	63.25	1.51
p2	327.10	0.99	444.93	4648.80	1.00	199.64	3702.18	1.68	75.54	3098.60	2.04	58.45	2215.72	2.09	62.17	1.48
TILE_22	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.65	0.99	75.75	4694.20	1.01	141.22	4171.02	1.90	58.60	3189.03	2.10	60.26	2428.90	2.30	62.47	1.56
p1	327.35	0.99	74.00	4669.18	1.01	151.85	4117.52	1.87	60.52	2996.10	1.97	65.01	2184.03	2.06	65.53	1.50
p2	328.25	0.99	84.00	4688.07	1.01	157.29	4084.25	1.86	61.58	3126.18	2.06	63.30	2310.88	2.18	63.88	1.53
TILE_23	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.88	0.99	70.25	4703.88	1.01	133.07	3970.03	1.81	66.50	2866.25	1.89	72.02	1992.17	1.88	88.04	1.45

p1	324.98	0.98	74.00	4702.32	1.01	145.13	4010.97	1.82	64.54	2967.65	1.95	71.85	2013.40	1.90	86.24	1.47
p2	329.70	1.00	74.00	4698.50	1.01	147.63	3855.18	1.75	70.71	2867.75	1.89	77.04	1897.72	1.79	96.49	1.43
TILE_24	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.40	0.99	64.00	4721.80	1.02	137.78	4285.48	1.95	54.69	3149.82	2.07	57.36	2261.75	2.14	60.15	1.54
p1	327.12	0.99	64.00	4694.70	1.01	152.90	4248.18	1.93	56.13	3228.05	2.13	58.76	2314.18	2.19	63.47	1.55
p2	329.62	1.00	64.00	4666.07	1.01	161.69	4137.90	1.88	59.43	3150.40	2.07	62.14	2423.70	2.29	62.76	1.55
TILE_25	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.38	0.99	71.25	4705.75	1.01	155.03	3997.40	1.82	64.82	3304.82	2.18	50.60	2392.55	2.26	52.45	1.55
p1	320.40	0.97	74.00	4660.95	1.00	167.19	3976.68	1.81	65.81	3452.07	2.27	53.72	2549.38	2.41	55.78	1.57
p2	324.00	0.98	74.00	4661.90	1.00	189.22	3838.05	1.75	70.95	3232.97	2.13	54.10	2422.97	2.29	56.43	1.53
TILE_26	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.48	0.99	71.00	4709.98	1.01	138.40	4306.23	1.96	54.04	3252.05	2.14	57.61	2350.18	2.22	61.04	1.57
p1	329.32	1.00	66.00	4668.07	1.01	152.20	4239.60	1.93	56.24	3203.18	2.11	60.04	2449.55	2.32	61.55	1.57
p2	331.73	1.00	74.00	4694.55	1.01	153.07	4115.32	1.87	60.84	2984.10	1.97	65.58	2169.75	2.05	66.36	1.50
TILE_27	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.70	1.00	80.00	4681.65	1.01	160.11	4003.55	1.82	64.76	3516.75	2.32	50.84	2631.45	2.49	51.35	1.60
p1	325.98	0.99	77.00	4683.80	1.01	157.98	4009.72	1.82	64.69	3123.70	2.06	53.70	2362.62	2.23	54.03	1.53
p2	325.10	0.98	84.00	4670.75	1.01	195.73	3880.22	1.76	69.51	3377.95	2.22	52.23	2501.75	2.36	52.34	1.56

p0_score:	43.22
p1_score:	42.79
p2_score:	42.24

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	18.00	11.00	5.00
Avg_Seconds_To_Complete	19.76	17.46	353.30
Failures	0.00	0.00	0.00
Ratio	1.12	1.22	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Turbo_Setting:0
	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)

Unreviewed_VMmark2_Applications_Score	42.79
Unreviewed_VMmark2_Infrastructure_Score	1.20
Unreviewed_VMmark2_Score	34.47

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 5.1.0 U2 Build 1483097/ 01-16-2014
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.1.0 Build 799731 / 11-19-2012
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	HP ProLiant DL580 Gen8
Processor Vendor and Model	Intel Xeon E7-4890 v2
Processor Speed (GHz)	2.80
Total Sockets/Total Cores/Total Threads	4 Sockets / 60 Cores / 120 Threads
Primary Cache	32 KB I + 32 KB D on chip per core
Secondary Cache	256 KB I+D on chip per core
Other Cache	37.5 MB I+D on chip per chip L3
BIOS Version	P79 01/14/2014
Memory Size (in GB, Number of DIMMs)	1024 GB, 64 x 16 GB DIMMs
Memory Type and Speed	Dual Rank PC3-14900R 1866 MHz
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	HP Smart Array P830i
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	HP SN1000Q PCIe dual port 16 Gb Fibre HBA
Number of Network Controllers	3
Network Controller Vendors and Models	HP Ethernet 1 Gb 4-port 331FLR Adapter, 2 x HP Ethernet 10Gb 2-port 560SFP+ Adapter
Other Hardware	none

Other Software	none
Hardware Availability Date (MM-DD-YYYY)	02-18-2014
Software Availability Date (MM-DD-YYYY)	01-16-2014
Network	
Network Switch Vendors and Models	1 x H3C S5820X-28S
Network Speed	H3C S5820X-28S - 24 x 10 GbE ports, 4 x 1 GbE ports
Storage	
Array Vendors, Models, and Firmware Versions	Fusion-io ION Accelerator, FW 2.2.0
Fibre Channel Switch Vendors and Models	HP SN3000B 16Gb 24-port Fibre Channel Switch
Disk Space Used	14.4 TB
Array Cache Size	N/A
Total Number of Physical Disks Used	8 (2 per SUT OS, 2 for Fusion ION OS per storage system), 6 x PCI-e Flash
Total Number of Enclosures/Pods/Shelves Used	2
Number of Physical Disks Used per Enclosure/Pod/Shelf	Internal: 2 disks per host Enclosure: 2 disks for Fusion ION OS per storage system, 6 x PCI-e Flash
Total Number of Storage Groups Used	0
Number of LUNs Used	16
LUN Size and Number of Disks Per LUN	All LUNs spread across 3 x Fusion-io PCIe cards under the control of the Fusion-io ION Accelerator 16 LUNs: 900 GB
RAID Type	RAID 0 for enclosures, RAID 1 for OS drives
Number of Members per RAID Set	RAID 1: 2 RAID 0: 3
Disk Vendors, Models, and Speeds	8 x HP 146GB 15K RPM SAS SFF (P/N 652605-B21) 6 x Fusion-io 2.4 TB ioDrive2 Duo

Datacenter Management Server	
System Model	HP ProLiant BL465c G7
Processor Vendor and Model	AMD Opteron 6134
Processor Speed (GHz)	2.30
Total Sockets/Total Cores/Total Threads	2 Sockets / 16 Cores / 16 Threads

Memory	16 GB
Network Controller(s) Vendors and Models	Integrated NC553i Dual Port FlexFabric 10Gb Converged Network Adapter
Operating System, Version, Bitness, and Service Pack	Microsoft® Windows® 2008 R2 Enterprise (64-bit)
Other Hardware	none
Other Software	none

Clients	
Total Number of Clients / Total Physical Clients / Total Virtual Client Hosts	29 / 1 / 12
System Model(s)	HP ProLiant BL465c Gen8
Processor Vendor(s) and Model(s)	AMD Opteron 6174
Processor Speed(s) (GHz)	2.20
Total Sockets/Total Cores/Total Threads	2 Sockets / 24 Cores / 24 Threads
Memory per Physical Client	64 GB
Network Controller(s) Vendors and Models	Prime Client: HP 551i embedded dual port FlexFabric 10Gb adapter, 1xHP NC542m dual port Flex-10 10 GbE adapter Virtual Client Hosts 0-11: HP NC551i embedded dual port FlexFabric 10Gb Adapter, 1xHP NC542m dual port Flex-10 10 GbE adapter, 1xHP NC552m dual port Flex-10 10 GbE adapter
Operating System, Version, Bitness, and Service Pack	Prime Client: Microsoft® Windows® 2008 R2 (64-bit) Virtual Client Hosts 0-11: VMware ESXi 4.1 U1 (Build 348481) Virtual Clients 0-27: Microsoft® Windows® 2008 R2 Enterprise (64-bit)
Number of Virtual Clients	28
Number of vCPUs Per Virtual Client	4
Number of vMem (GB) Per Virtual Client	4
Virtual Client Networking Notes	All client VMs attached to port 1 of NC542m card running at speed of 10 Gb/s
Virtual Client Storage Notes	Client VMs stored on local media respective to their ESX host. 1x300GB 6G 10K rpm SFF SAS disk per Physical Client
Other Hardware	HP BladeSystem c7000 Enclosure, 2xHP VC Flex-10 Ethernet Modules (only one used),4xHP 10 GbE Pass-Thru Modules (only one used)
Other Software	HP BladeSystem c7000 Onboard Administrator Version 3.31, HP Virtual Connect Manager Version 3.18

Notes for Workload

Virtualization Software Notes

- All VMs used virtual hardware V7
- All VMs (except for Deploy Template) had VMware tools version 8305 installed and running
- Ethernet adapter type set to vmxnet3 for all VMs (default vmxnet2)
- Logging was disabled for all VMs (default enabled)
- CD and floppy devices were removed on all VMs (default enabled)
- Firewall was disabled in the console OS (default enabled)
- All VMs besides standbys: Paravirtual Controller
- Cluster DRS Automation Level set to Fully Automated
- DrsMigrationThreshold set to level 2
- Logical CPU layout changed for all multi-cpu VMs to 1 socket w/ multiple cores. (default Single core per socket)
- All ds2db VMs had CPU shares set to High (default Normal)

Advanced Settings:

- Cpu.CoschedCrossCall = 0 (default 1)
- Cpu.CreditAgePeriod = 533 (default 3000)
- Cpu.HTWholeCoreThreshold = 0 (default 200)
- DataMover.HardwareAcceleratedInit = 0 (default 1)
- DataMover.HardwareAcceleratedMove = 0 (default 1)
- Disk.SchedNumReqOutstanding = 256 (default 32)
- Irq.BestVcpuRouting = 1 (default 0)
- Irq.IRQRebalancePeriod = 50 (default 2)
- Mem.BalancePeriod = 0 (default 15)
- Mem.SamplePeriod = 0 (default 60)
- Mem.ShareScanGHz = 0 (default 4)
- Mem.VMOverheadGrowthLimit = 0 (default 4294967295)
- Misc.TimerMaxHardPeriod = 4000 (default 100000)
- Misc.TimerMinHardPeriod = 2000 (default 100)
- Net.MaxNetifRxQueueLen = 500 (default 100)
- Net.MaxNetifTxQueueLen = 1000 (default 500)
- Net.NetTxCompletionWorldlet = 0 (default 1)
- Net.NetTxWordlet = 1 (default 2)
- Numa.LargeInterleave = 0 (default 1)
- Numa.LTermFairnessInterval = 0 (default 5)
- Numa.MigImbalanceThreshold = 57 (default 10)
- Numa.MonMigEnable = 0 (default 1)
- Numa.PreferHT = 1 (default 0)
- Numa.RebalancePeriod = 60000 (default 2000)
- Numa.SwapInterval = 1 (default 3)
- Numa.SwapLoadEnable = 0 (default 1)
- Numa.SwapLocalityEnable = 0 (default 1)
- VMFS3.HardwareAcceleratedLocking = 0 (default 1)
- Power.CpuPolicy = static (default balanced)

Driver Options:

- /vmkernel/module/qla2xxx/options = "ql2xmaxqdepth=256 ql2xintrdelaytimer=2 qlxenablemsix=1" (default 32, 0, and 0)
- /vmkernel/module/ixgbe/options = "MQ=0,0,0,0 InterruptThrottleRate=2000,2000,2000,2000 InterruptType=2,2,2,2 " (default 1, 16000, and 2)

Server Notes

Server BIOS settings:

- Power Management set to Maximum Performance (default: Balanced Power and Performance)
- Thermal Configuration set to Maximum Cooling (default: Optimal Cooling)
- HW Prefetcher set to Disabled (default: Enabled)
- Adjacent Sector Prefetch set to Disabled: (default: Enabled)
- Memory Double Refresh Rate set to Disabled (default: Enabled)
- Intel Turbo Boost Enabled (frequency boost to 3.2 GHz) (default: Enabled)

Networking Notes

- vSwitch0 for the Service Console on vmnic0 at 1Gb/s
- vSwitch1 defined as vmkernel vMotion connection on vmnic4 at 10Gb/s
    - MTU was set to 9000
- vSwitch2 for the DS2* workload on vmnic5 at 10Gb/s
- vSwitch3 for the Olio* workload on vmnic7 at 10Gb/s
- vSwitch4 for the mailserver workload on vmnic3 at 1 Gb/s
- vSwitch5 for the standby and deploy workloads on vmnic2 at 1 Gb/s

Storage Notes

- ESXi was installed on two disks configured as RAID1 in the internal server storage bay
- All LUNs were spread across three 2.4 TB Fusion-io ioDrive2 Duo PCI-e Flash cards in RAID0 within a single HP ProLiant DL380p Gen8 running Fusion-io ION Accelerator software.
- Physical Configuration for Fusion-io ION Accelerator:
    - Storage box #1
        - HP ProLiant DL380p Gen8
            - 2 x Intel Xeon E5-2643 3.30 GHz processors
            - 64 GB Memory (8 x 8 GB DIMMs dual rank PC3-12800 Registered DDR3)
            - 3 x 2.4 TB Fusion-io ioDrive2 Duo PCI-e Flash Cards configured in RAID 0
            - 2 x HP SN1000Q dual port 16 GB fibre HBAs
            - 1 x HP Smart Array 420i controller for ION OS
            - 2 x 146 GB 15K RPM SAS SFF for ION OS
    - Storage box #2
        - HP ProLiant DL380p Gen8
            - 2 x Intel Xeon E5-2690 2.90 GHz processors
            - 256 GB Memory (16 x 16 GB DIMMs dual rank PC3-12800 Registered DDR3)
            - 3 x 2.4 TB Fusion-io ioDrive2 Duo PCI-e Flash Cards configured in RAID 0
            - 2 x HP SN1000Q dual port 16 GB fibre HBAs
            - 1 x HP Smart Array 420i controller for ION OS
            - 2 x 146 GB 15K RPM SAS SFF for ION OS
- Virtual Configuration for Fusion-io ION Accelerator:
    - Storage box #1
        - 8 LUNs at 900 GB
            - 6 LUNs had all VMs from 2 tiles (except for the standby VM)
            - 1 LUN had all VMs from 1 tile (except for the standby VM)
            - 1 LUN had all VMs from 1 tile and all standby VMs and the Deploy Template

    - Storage box #2
        - 8 LUNs at 900 GB
            - 6 LUNs had all VMs from 2 tiles (except for the standby VM)
            - 1 LUN had all VMs from only 1 tile (except for the standby VM)
            - 1 LUN had all VMs from only 1 tile (except for the standby VM) and was used for deploy target and sVmotion target
- All LUNs were distributed across all 3 x 2.4 TB Fusion-io ioDrive2 Duo Flash cards in RAID0
- All LUNs were configured as block devices and no system memory was used for write caching

Datacenter Management Server Notes

None

Operating System Notes

- All mailserver VMs running Microsoft® Windows® 2008 R2 Enterprise SP1 (64-bit) and were updated with all critical updates via windows update on November 26, 2013.
    - The Shell Hardware Detection service was not running on mailserver VMs.
    - The Application Experience service was running on mailserver18.
    - The Microsoft Exchange System Attendant service was not running on mailservers 5, 15, & 22.
- All standby VMs running Microsoft® Windows® 2003 Enterprise SP2 (32-bit)
- All DS2DB, DS2WebA, DS2WebB, DS2WebC, OlioDB and OlioWeb running SUSE® Linux Enterprise Server 11 SP2 (64-bit)

Software Notes

· Microsoft® Exchange Server 2007 Enterprise SP3 (64-bit) was installed on each mailserver VM

Client Notes

· Prime client functionality was split from the client0 driver and was run on a non-virtualized copy of Microsoft® Windows® 2008 R2 Enterprise (64-bit).
· Prime client was running VMware vSphere PowerCLI 5.1 Release 1 Build 793510
· All client drivers were run on virtual machines that were each defined with 4 virtual CPUs, 4 GB of memory, 1 vmxnet2 network, and 32 GB of disk space.
· Twelve HP ProLiant BL465c G7 clients ran the 28 client virtual machines as follows:

- system 1: hosted vclients: 0, 12, 24
- system 2: hosted vclients: 1, 13, 25
- system 3: hosted vclients: 2, 14, 26
- system 4: hosted vclients: 3, 15, 27
- system 5: hosted vclients: 4, 16
- system 6: hosted vclients: 5, 17
- system 7: hosted vclients: 6, 18
- system 8: hosted vclients: 7, 19
- system 9: hosted vclients: 8, 20
- system 10: hosted vclients: 9, 21
- system 11: hosted vclients: 10, 22
- system 12: hosted vclients: 11, 23

· All client operating systems were updated via Windows Update.
· The SPP Notification Service was only running on clients 14-27.
· The Software Protection service was only running on clients 14-27.

· The WinHTTP Web Proxy Auto-Discovery Service was not running on clients 1, 3, 20 and 27.
· The Microsoft Exchange Load Generator Remote Agent service was not running on client 12.

Other Notes

The SUT hosts (HP ProLiant DL580 Gen8) had 2 additional tiles of VMs that were registered, but were not used. The VMs in the additional tiles were powered off for the duration of the benchmark.
